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THE NATIONAL GEOGRAPHIC MAGAZINE

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NOTE.—The delay in the publication of this number of THE NATIONAL GEOGRAPHIC MAGAZINE is due to the repeated failure of the engravers to reproduce to the satisfaction of the Editors of the Magazine the admirable portrait of President Hubbard recently taken at their request. It is hoped that the faithful likeness and striking picture that has finally been secured will be accepted by the members of The National Geographic Society and the subscribers to the Magazine as a justification of a delay that is regretted by no one more than by the Editors themselves.



HON. GARDNER GREENE HUBBARD, LL. D.,
President of the National Geographic Society.

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AFRICA SINCE 1838, WITH SPECIAL REFERENCE TO
SOUTH AFRICA AND ABYSSINIA *

By Hon. GARDNER G. HUBBARD, LL. D.,

President of the National Geographic Society

Eight years ago I selected Africa as the subject of my annual address before the National Geographic Society. Since then the nations of Europe, seeking new outlets for trade and possible homes for their surplus population, have taken possession of the larger part of the continent. They have developed Africa more rapidly than in any preceding age, and have greatly increased our knowledge of it.

Africa and America were discovered about the same time—the one by Portugal, the other by Spain. Soon afterward the slave trade was established between the two continents to supply the place of Indian labor, the natives of America, unable to stand the tasks imposed upon them by the Spaniards, having been exterminated. This trade proved so profitable that England soon took part in it, exchanging her products for slaves transported to the Spanish colonies in America. This continued for two hundred and fifty years, or until the early part of the nineteenth century, when the slave trade was abolished and the trade in intoxicating liquors substituted, which has been to the African a greater evil than the slave trade. A recent writer says that four million gallons of the most poisonous gin and rum are imported yearly into the Niger and Niger coast protectorates.

*Annual presidential address, delivered April 24, 1885.

Nearly half a century ago two or three large mercantile firms of Hamburg and Bremen established trading stations on the west coast of Africa. Their profits were very large, as, in exchange for rum, trinkets, beads, and worthless arms, elephant oil, ivory, india-rubber, and other tropical products were obtained. This trade finally resulted in the starting of a regular line of steamers from Hamburg to the west coast, and also of one through the Suez canal to the east coast. Prince Bismarck realized that he had a most urgent problem to solve, either to restrain German emigration, or, failing in that, to keep it under the control of the empire. America was closed; Asia was all taken; his only opportunity was colonization in Africa. He ordered German ships of war to visit the African coast, and established consulates at different ports. Treaties were made with the natives for the purpose of acquiring colorable titles to large tracts of land, the German flag was raised, and the country declared to be under German protection. These settlements are merely stations, where two or three families of foreign merchants reside, and outstations of natives—middlemen, who carry on the trade between the natives of the interior and the foreigners on the coast. Germany also claims the hinterland or interior country behind the stations, although most of it had been regarded by the English as under their flag.

At the time of the uprising in Egypt against the rule of England and France, in 1882, France declined to act with England, but soon bitterly regretted her mistake, and to offset her loss in Egypt she extended her dominion in northwest Africa and on the Gold Coast and the upper Niger, although most of these regions had been claimed by English traders. About the same time the Kongo Free State was founded and claimed the whole of the Kongo valley. This was opposed by both France and Portugal, the one claiming the country north of the Kongo, the other that to the south. Thus in 1883 and 1884 it seemed that all the great nations of Europe might come into conflict regarding their different claims in Africa. For the purpose of settling these questions and defining the rights of each country, Germany, France, Belgium, Portugal, and England held a conference at Berlin in 1884, to which the United States was invited, the only conference between the great powers, relating to foreign affairs, in which it has participated. At this convention and by subsequent agreements made between 1885 and 1895 the European powers fixed the boundaries of their several African possessions.

It was determined that free navigation and free trade should be established for all nations within the regions watered by the Kongo and its affluents—a right subsequently annulled—and on the Zambesi to a point five miles above the mouth of the Shiri, and free trade for transit to regions on the Niger beyond British influence.

Under these agreements England and France each claim a little more than twenty-five per cent of the Continent; Portugal, Germany, and Belgium together claim about twenty-three per cent. The other European powers, with the Boers of the Transvaal and the sultan of Turkey, together hold about twelve per cent, leaving to the Africans the desert of Sahara and part of the Sudan, about fifteen per cent. This gives to the European powers, having no right but that of might, all those portions of Africa supposed to be habitable or valuable.

It has been the policy of Great Britain to allow her merchants to establish commercial relations with the natives by opening trading-stations, but not until the trade becomes profitable, and private enterprise and money have established the value of the trade, to raise her flag, claim them as British possessions, and exercise governmental control. The East Indian empire was the outgrowth of a trading-station. France and Germany reversed this policy, first taking possession of different parts of Africa, establishing territorial governments, and afterward offering inducements to mercantile companies to establish trading-stations and in addition guaranteeing protection from the natives. England as a result of her policy—the flag following the trade—has secured the most valuable parts of Africa.

France holds an immense territory on the Mediterranean, with Algiers as its capital, the country south of Algiers and west of Senegambia, and on the upper waters of the Niger, while England claims the Niger and Benue, the only navigable rivers in Africa. England formerly claimed Damarraland and Namaqualand, on the southwest coast of Africa, but yielded them to Germany, reserving a small tract of land near the center of the territory, Walvisch bay, the only good harbor on the coast and the best means of access to the interior of the German possessions.

England allowed Germany to secure a vast region in East Africa over which she had claimed dominion, but claims for herself a large portion of South Africa, the Shiri and the upper waters of the Zambesi, the part of Africa best fitted for the occupation of Europeans. She retained Egypt, allowing France to

acquire Tunis and the desert of Sahara. She yielded to Italy the southwest coast of the Red sea and south on the Indian ocean to the river Juba, including Massowah, the most unhealthy part of the Red sea, on condition that Italy should occupy Kassala and drive out the Mahdists, reserving also for herself the best harbors in the Italian territory on the Indian ocean.

The occupation of Africa has cost France \$750,000,000 and Italy her reputation as one of the leading powers of Europe; Germany has failed in her colonization scheme, for, as a recent writer says, her colonists in Africa number less than 1,000 and cost about \$2750 a year each, while the only portions of Africa that have yielded large returns for investments made by colonists are the regions controlled by England on the Niger and in South Africa.

THE BRITISH SOUTH AFRICAN COMPANY.

The government of these vast tracts and colonies has generally been granted to companies chartered by the governments of Europe. One of these companies, the British South African Company, was founded in 1889 by Mr Cecil Rhodes. The son-in-law of the Prince of Wales and other members of the nobility were made directors and officers, receiving full-paid founders' shares. De Jameson was one of the subordinate officers. The par value of the stock, £1, soon rose in the market to £3 or £4, thus securing a handsome profit to the company's noble directors. The company was authorized "to acquire by any concession, grant, or treaty all or any rights, authorities, jurisdictions, and powers of any kind or nature whatever, including powers necessary for the purposes of government, comprised or referred to in the concessions and agreement made as aforesaid or affecting other territories, lands, or property in Africa or the inhabitants thereof." Among the privileges given to it are "the right to establish banking and other companies and associations; to make and maintain railroads, telegraphs, and lines of steamships; to carry on mining operations and license mining companies; to settle, cultivate, and improve the lands; to preserve peace and order in such ways and manner as it shall consider necessary, and for that object may establish and maintain a force of police and have its own flag."

The territory originally included in the charter of the company was many times larger than Great Britain, but Mr Rhodes and his associates, still unsatisfied, penetrated into Khama's country, Matabeleland and Masboulaland, defeated Lobengula,

and added a large tract to that already under British protection. But still beyond lay richer lands, and in June, 1895, a territory called Northern Zambesia and Nyasaland, larger and more valuable than the original grant, was added to the South African Company. This was the land discovered by Dr Livingstone, settled by Scotchmen at his instance, and here on lake Bangweulu he died. The whole territory is now called Rhodesia, or Zambesia, and extends from Cape Colony north over two thousand miles past lake Nyassa, with lake Tanganyika as its northeastern boundary and the Kongo Free State its northwestern. The company now claim a territory of nearly one million square miles, an area larger than Europe exclusive of Russia.

The country is very thinly populated, and the valleys of the Limpopo and Zambesi are infested by the tsetse, a stinging fly unknown elsewhere; its bite is fatal to the horse and ox; it seems, however, to disappear with the advance of civilization. But notwithstanding this pest, Zambesia, with its great elevation, its fine climate, its fertile soil (much of it capable of cultivation by irrigation), and its great mineral deposits, may become one of the most wealthy and densely populated portions of Africa.

Within the territory of the South African Company are the richest diamond mines in the world, and just over its border, in the Transvaal, the richest gold mines.

DIAMONDS

India was formerly the only country in which diamonds were found to any great extent. They were afterward discovered in Brazil, and some of small size have been found in other places. The diamond fields of both India and Brazil appear to be nearly exhausted. The first diamond discovered in South Africa was found in 1868 near Kimberley, 620 miles north of Cape Town. Since 1870, when mines were opened, the production has rapidly increased, and in twenty-five years these mines have produced more and larger diamonds than all other countries, 98 per cent of the present production of the world coming from Kimberley.

These stones are found in a region about twelve miles in circumference, where four small hills or pipes, as they are called, rise from 60 to 80 feet above the ground, probably natural chimneys or extinct centers, lined with walls of basalt, broadening out below the surface to a great depth. These craters are filled with a blue diamantiferous formation, which has been forced to the surface of the ground by the pressure of the subterranean

gases. In this formation the diamonds are imbedded, in a regular order known to miners. Formerly the earth was thrown out from the surface until several hundred feet in depth over a large area had been removed. This method of working was dangerous and expensive, and now shafts are sunk at a little distance from the centers and the blue earth is reached by underground galleries. The workings are inclosed by high walls, within which the workmen are confined during the time of their service. Each night they are stripped and their persons and clothing subjected to a most careful examination. The secretion of diamonds or their purchase from workmen is punished most severely; but with all these precautions diamonds to the value of probably a million dollars a year are secured by the miners. Instances like the following are not uncommon: A man escaping on horse-back was carefully examined and released, no diamonds being found upon him, but on crossing the border he stopped, dismounted, shot his horse, and took from the animal a small bag of these precious stones.

There were originally so many different claims and rival companies that their consolidation seemed almost impossible. It was then that Mr Cecil Rhodes first appeared prominently before the world. Through his financial genius and marvellous management the companies were consolidated into one corporation, with a capital of \$20,000,000. The net profits in 1895 are said to have been over \$11,000,000 from the sale of the diamonds; 65,000,000, or 25 per cent, was divided and the balance carried to a reserve fund. The production is limited to the demand, so that the market may not be overstocked and the diamond decrease in value.

TRANSVAAL, OR SOUTH AFRICAN REPUBLIC

Not far from the diamond mines are the richest gold mines in the world. These are in the Transvaal, a country of from 110,000 to 120,000 square miles, 240 miles from north to south and 360 miles from east to west, and with a population of 700,000 to 750,000. Of these 75,000 are Boers.*

The ancestors of the Boers were Dutch and French Huguenots, who had with our own Pilgrim Fathers found in Holland a refuge from persecution for more than a generation. They left Holland about the same time that the Pilgrims and Dutch sailed for America—the one to an inhospitable climate and a

* Boer is the name used as the German *Bauer* and English *lover*, a peasant farmer.

side of north tip, present on, and intense activity the other to a great extent, where that was unnecessary as it were on the

lation. The one has it as advanced, the other retrograded a difference largely due to environment.

The southern coast of Africa for nearly eight hundred miles, is entirely destitute of navigable rivers. No pebble bar or low island has only one or two open roads, and therefore offers no inducement to commerce. Nearly parallel with the coast are three chains of mountains running from east to west, the first about fifty miles from the ocean and the others from fifty to one hundred miles apart, each succeeding range rising higher than the one in front of it. On the coast the soil is rich and fertile, producing excellent grapes, yielding more wine per acre than that of any other country, the soil of an inferior quality. There is an abundant rainfall and the crops are large but the rain clouds passing over the country, leave the position between them dry and barren. Most of the flora ranges in the vicinity of the Orange varies branches of which rising to the north and south among the mountains, flow across Africa to the Atlantic. The western watershed is well watered and can be easily irrigated, but much of the land is only adapted to grazing.

The railroad from the cape of good hope to Johannesburg runs almost through the middle of the country. The lower west of the railroad is arid, and the Orange river grows shallower as it approaches the sea. Only a small portion of the country is suitable for agriculture, but a large part affords with but little labor good pasturage for cattle and sheep round. The climate is delightful the thermometer rarely rising to 80° Fahrenheit, and below the freezing point.

This country was formerly inhabited by the Hottentots, a people at lowest in the scale of human races. About 1600 the Dutch arrived in South Africa the Boers, the highest in the scale, were pushing their way to the south along the western coast, forcing the Hottentots into the interior and then on to the west. After the advent of the Dutch the increase in population was very slow, the total number of inhabitants being only about twenty thousand when the English took possession of Cape Town in 1662. The English soon grew to be better educated than the Boers, and the two races have rarely intermarried.

After the Crimean war in 1855, 2,000 to 3,000 farmers, emigrants to that war were given land on which to begin new careers. A few

by the English. These I see in the tank, being absorbed by the

between 1821 and 1833 slavery was abolished by Great Britain. The Dutch, who were engaged in trade and agriculture, freed their slaves and remained in Cape Colony, or moving north and more west the English, those engaged in the raising of cattle, desertified with no compensation offered, moved to the west, to the still un-settled interior.

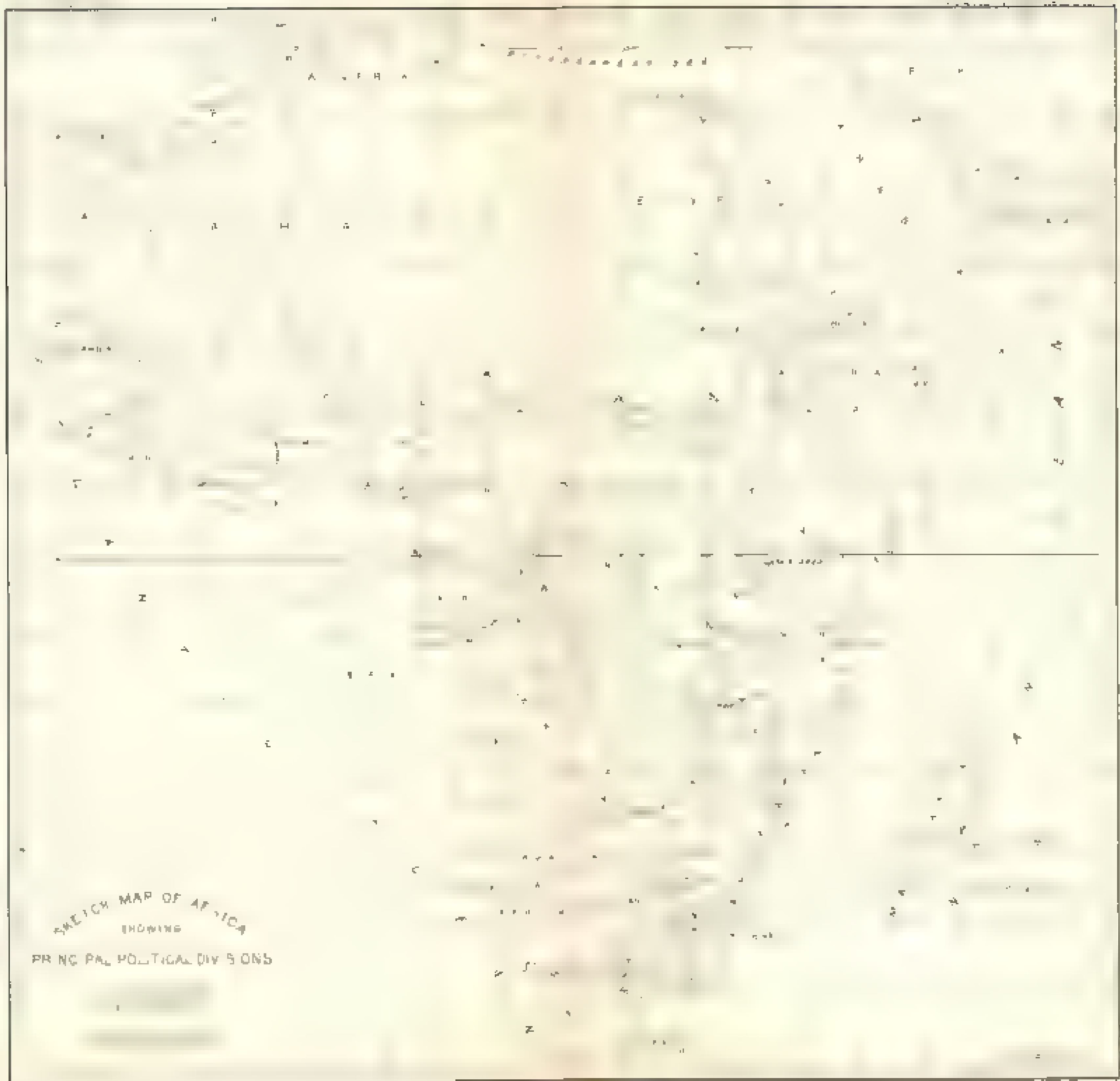
The English and the Boers were engaged in continual conflict with the natives, but the home government was unwilling to send the soldiers. The Boers were forced to compensate the natives themselves, and thereby gradually began to lay about, returning with their families and cattle, trusting out of employing the natives, and they reached the Orange river in 1836.

They now inhabit the Orange Free State. Between 1836 and 1838 they settled beyond the river Vaal, in the Transvaal. Here scattered over a vast area each family occupies as many acres as it needs. There is no trace of intercommunal distinction save for the wages paid, traveling they live to see a day. The people are white and bear no colour and there are very few towns or villages. In such a community education is necessarily excluded. Inter-mingling with Basutos, Gonaquas, and Kaffirs they speak a dialect and as earlier we saw Dutch or the Dutch spoken in Cape Town. They live in perfect social equality, with a strong

mor, but shrewd and self-willed. Mr. Johnston has described them as "Protestants in religion, Hollanders in origin, vigorous, obstinate, and tenacious in character, and as we are."

In time of drought they move with their families or a cattle herd to place to place for pasturage, returning after the rains to their homes. The husbandry of the Boers is not a science, but only for the production of the cattle from which animals, but of food, clothing and trade. In warlike and the population, in commerce, and of labour are lost, almost entirely driven to the north. When they are in the land with a victory they are rewarded by a gift with the cattle.

When the Boers receive a new constellation from the president they take to the president's residence, and in the morning, found that horses and cow. The best charabancs are given to the president, as the Boers have frequently earned to their cost. The Boers in the house of Mr. Johnston, where the strong and the weak, some were counted as by the president.



When the Boers were first come to land and for some time afterwards during their nomadic life, they were under English rule. They rebelled at times, but it was not until 1852 that they became all the Boers who are not become a free people. In 1852 Jan Kruger was elected president, and by the Convention of London in 1854 the Transvaal was recognized as a nation. The Boers were to retain the right to sign no "unequal treaties" in league with any state or nation other than the Orange Free State, and with no other European outside the Transvaal. The Boers agreed that "all persons within the boundaries shall have full liberty to do in any part of the Transvaal and to carry on any kind of business and such persons were to be subject to no higher tax than there is or may be imposed upon citizens" so that no slavery was to be tolerated. If these privileges are conceded, England has no right to interfere in its internal affairs.

The governing body of the Transvaal is usually a bulwastered by a council of but the power is in the hands of Paul Kruger, the president, the grandson of a German, a stout, bluff of great int-

erest of strong keen will, business and great withness of purpose. When parliament is not in session, as has power to issue proclamations, which can be enforced until its next meeting and when it is in session he rules the members, it is said, by threatening to reduce their salaries.

In 1866 gold was discovered on a ridge about six thousand feet above sea level, near the present city of Johannesburg. The migrants came and flocked in. Today Johannesburg is the centre of a district, according to an informant last year, consisting of 12,000 Europeans. An enormous number of whom are engaged in mining.

This discovery of gold has been most fortunate for the world. As the production of the mines of California fell off, the loss has been made up in the Transvaal. After the discovery of the California mines, the gold production of the world fell only one-third until 1884, when it reached the maximum of \$150,000,000, then it began to fall and reached in 1890, when it was only \$50,000,000, at which time the African mines began to step by the increase. South African production has steadily increased and it is believed that in 1900 it will be over \$200,000,000. The British and the French and the Dutch were the first to come to the Transvaal. The Germans have been chiefly responsible for the discovery of gold in the Transvaal and it is believed that they have more extensive knowledge of the gold fields than any other power in the world.

Solomon

Beside the gold mines the Transvaal is rich in all kinds of
 as very rich, and with a proper system of irrigation is capable of

the rule of fifty thousand Boers."

to which as foreigners and non-naturalized citizens they are not
 entitled. They assert that taxes in Johannesburg, contrary to
 the exception of 1854 are ten times as high as in Pretoria,
 and that non-naturalized of all the taxes are paid by them; that
 they have no right to vote or to participate in the administration
 of the general or local governments. But they are com-
 pelled to submit to laws where all the interests are at stake
 and to pay. Is it not a law that Pretoria is a town of
 poor houses. Is it not a law that Johannesburg is thriving mainly
 by, with a large, mostly poor population where taxes must be high;
 that the foreigners are absorbing the trade and carrying away
 the wealth of the country, and should therefore pay the larger
 part of the taxes, that they have given up that is the right to
 vote after naturalization and to become members of the power,

by the Boers for their own election, not for the English, and
 that naturally no provision has been made for instruction in a

short time and without invitation from the Boers. We must not
 need a demonstration to submit and be for their own profit and

voluntary submission.

That all orders looked to Mr Cecil Rhodes and his company for
 help and glory and not to you any more that might be sent
 to their relief. In response to this a permit for arms and ammu-
 nition to the chartered company, ordered that it should
 enter the Transvaal in the first half of 1881 to control the trans-
 vaal to King William; but he did not understand the strategic
 with the Boers, and a City of the Boers. Let us find

gash forces. All South Africa will have rejoiced in the success of Le Johnston, and I hope and would have accepted, the situation. Germany might have objected, though we cannot see

any reason from her possession, and the new doctrine of "sphere of influence" could not have applied.

The Boers have shown great forbearance, wisdom, and good judgment in this emergency. In time of peace armies, even in-

justice may be changed, but, at the request of the British government, the president surrendered at Jameson and his army for trial according to the laws of Great Britain. We doubt if it would be easy to find in all history an instance of like forbearance and mercy. It should, however, be remembered that the Boers of the present have either taken the natives from the Transvaal or reduced them to slavery. The latter evil and a crying one, the Boers

think to atone with the abolition of slavery, for a good harvest of wheat and maize, mines of gold and coal, and large herds of stock, which attract a very large number of emigrants from England. Further restrictions, whether measures to arrest annexation or to give the natives the civil rights they claim, will do no

good to them.

Other gold mines are worked in various places on the territory of the Chartered Company, and now, in November, 1886, the new kind of gold mine has over a population of 4,000, and is the center of one of the gold fields. None of these fields has as this far proved so rich as this, but there is every reason to believe that gold will be found in great quantities.

revolutionary movement, shed without statement or evidence. In these we look in vain for a master-mind, acting either alone or with others. At the least a grievance are the charges effected by the discovery of gold. The middle of the century witnessed a material development in the United States and Australia; its consequences to witness an even greater or equal than in South Africa.

AFRICA RIVER

We turn our turn from the Transvaal to Abyssinia and the smaller possessions on the Red Sea, where Italy is engaged. It is what may prove to be a life-and-death struggle.

Abyssinia or Ethiopia as it was formerly called, is the most civilized part of Africa. The coast of the Red Sea is here low, level, and utterly covered of vegetation, consisting of great sand-

bars and great outcrops. A traveler, writing of this region, says: "The country is a land of desolation, there is not an inhabited, irrigated, perpetual, fertile tract, not a small one or more fertile than Abyssinia in the year, the occupation of the inhabitants is teaching herds of cattle in flocks and herds, while long herds of camels, and horses always always for exportation, and their herds for power."

The ground rises abruptly to the height of one or ten thou-

the coast lands to the northwest, while the range continues its southerly course. Some of these mountains rise to the height of over a thousand feet. Far away on the west the country

great lakes. The only access to these plains from the Red Sea is up great ridges or canyons 1,000 to 3,000 feet in depth, each canyon varying in width from two or three feet to one hundred feet, with sudden turns shutting off the view beyond. Down these canyons in the wet season the water rushes with great violence, bringing masses of stones and rocks. But the greater part of the year they are dry and the traveler must often go from twenty to thirty miles without finding water. The plains when reached is not a level plain, but is broken and covered up by a low sand on, the mountains are rising with fantastic forms, with a high, precipitous valley only a few miles the high deep passes. The plains are between the mountains and the mountains, but above sea-level are the temperate regions, never hot or very hot or very cold. Some of the canyons are so deep that one can stand on the side and see the sun, and see the moon, and see the stars, and see the stars, and see the stars, and see the stars. The rivers flow through these canyons and the farmers keep them open, instead of turning them. It is a region of the Nile rises and flows through deep canyons of a great

4,000 feet in height and three hundred miles and cutting Abyssinia into Northern and Southern Empires. The volume of the river is increased from 6,000 cubic feet per second in the dry season to 20,000 in the rainy season and it carries down a wealth from these high lands to Egypt, which owes its perennial fertility to the Nile.

From its source in Abyssinia is healthy and its climate is said to be as salubrious as any on the globe. The valleys on the western side are fertile producing abundant fruits and the cultivation of the temperature and tropical crops. The high ranges are the home of Abyssinians, the Amaras, and Jews of the Caucasus race—actually civilized tribes, more or less civilized, and still calling themselves Christians. The people are strong and brave, but rude and barbarous. The different tribes are generally at war with each other, and the different ones are all under independent rulers who cannot derive from the Queen of Sheba.

European troops have never been able to conquer the Abyssinians, but they have always been most efficient as they have never been defeated either on Egyptian or Italian territory of the Nile or on the high mountain range of the Caucasus. The British have been the only ones to attempt it, but a small party of a dismounted infantry. The Abyssinians led them to the edge of the mountains, behind the rocks and crevices, and as the enemy has not had the help of the cannon, but of a single long gun, the most notable exception was in 1868 when the British, under Sir R. Napier, marched through one of these canyons, passed Mekele, and took the great king Theodora at that time. The king had, by his attack, caused the British to be killed and through the rain, the British passed up the canyon with no opposition. It was in one of these canyons that the Abyssinians, under Menelik, the Negus Negami or King of Kings, as their emperor is called, by going to meet and recently surprised and completely routed the Italians. It is so that the Abyssinians carry of one hundred thousand men was supplied with the best repeating rifles by the French and I saw many, and was asked by French officers.

The Italians have recently sent an embassy to Abyssinia and received an answer from that country, and negotiations are in progress to bring the Abyssinians into the track of civilization.

About seventy years ago the Egyptians occupied the whole of

the upper Nile, even to the Great Lakes and the valley of the Red sea. Abyssinia lay between these possessions, and the Khedive desired to conquer it. He sent two large armies, which marched on the eastern frontiers of the Nile to Abyssinia; both armies were defeated. The son of the Khedive, the commander of the second army, was captured with a large number of men, but was subsequently released.

A Mohammedan, born in Fungola, called *El Mahdi*,—i.e., the Leader, prophet, or guide—appeared in the Sudan about 1880, and received a lot of the Prophanes on a small island in the Nile near Khartoum. Soon Arabs from the desert, and many of the Bedouins flocked from all parts of Egypt. About the same time Arabi Pasha, then an officer in the Egyptian army, conspired with *El Mahdi* and seized Cairo, the Khedive and English retreating to Alexandria. Sir Garnet Wolsey was sent

THE
SUDAN

to relieve him. He was so completely shut to Egypt, that the British troops in the upper Nile could not extend, and soon the whole population of the Sudan and upper Nile was gathered under the banner of the prophet *El Mahdi*. He defeated four expeditions, and in 1885 the Lord Harek Pasha, with an Anglo-Egyptian army of 10,000, was sent against him. They marched into the desert, and for months nothing was heard of the expedition. At last a few towns of its population reached Cairo. It was then *El Mahdi* captured Khartoum, killing General Gordon a few days before General Wolsey with his 10,000 men entered the gates of the city. Four miles. They set on fire, but did even attempt to arrange the retreat.

El Mahdi survived a few months longer, but his army was not dispersed. General Duguid, the general of the Mahdists, overran the region east of the Nile, capturing and massacring Khartoum, and passing on at different places and marching to the very gates of Sudan and Red Sea, where the Mahdists desired to have a seaport for communication with Arabia, in order to obtain a good market for slaves from the interior of Africa. With these Nile hosts the Italians have now to contend. Soon after their occupation of Massowah they acquired control of Tigre and Kessera, then aided by the Mahdists and Herossas. These fanatics, encouraged by the defeat of the Italians, are now said to be preparing to attack Kessera.

The Italians for the purpose of aiding the Italians and re-

covering the valley of the Upper Nile, wrested from Egypt by
 with an army of Sudanese and Egyptians, under English
 and 600,000, expecting, in the expectation that the Mahdists will

to Khartoum. If they are unsuccessful it is feared that the
 Mahdists will march down the valley to Cairo.

To an American it seems a folly to understand the reason

in a figure."

Unfortunately for Signor Crisp it has been translated into

THE PHYSICAL FEATURES OF AFRICA AS THEY AFFECT ITS ECONOMIC VALUE, FUTURE OCCUPATION, AND CIVILIZATION

The growth and prosperity of a country depend on its fertility
 in natural and vegetable productions, and its facilities for inter-
 communication.

Africa is marked by a different climate, especially in the tropics,
 sun, wind, and clouds, and the climate, and the climate. This
 and the climate is especially marked by the Mediterranean climate
 of Africa and Europe. The former is a large continent and

land, and the climate is marked by the Mediterranean climate
 and the climate is marked by the Mediterranean climate.

Africa has a coast-line of only 15,000 miles. If it was as long
 as Europe it would be 30,000 miles long.

The shape of the land, instead of being centered in the center

about 2,800 feet—is higher than that of the other continents.

The country north of the equator presents a great similarity to the country south of it, though the features on the north are on a much larger scale. North of the equator is the greater lake Chad south of it the sea of lake Ngami, north of lake Chad is the great desert of Sahara, south of lake Ngami is the smaller desert of Kalahari. North of Sahara, on the Mediterranean, and south of Kalahari, on the Indian ocean, are fertile tracts of limited extent, where the climate is almost arable and vegetation luxuriant.

The greater part of the territory between the Mediterranean and Sahara—between the Atlantic and the Red sea, and the extreme portion south of the Zambesi—comprising nearly one-half of Africa is practised by Sahara. It is a waste of desert.

The Sahara is a plateau of a tremendous extent with hills and mountains dotted up what resources, it is a mass of sand and shingles, average height 1,000 feet, interspersed with sandy wastes. As a result the temperature falls quickly, on being a few hours out of the sun, and rises again between a day and a night. Scattered throughout the desert are places of low ground where the late rains in the spring have left pools, lakes, or low marshes, and great quantities of the produce of these masses of water. The desert of Kalahari, in southern Africa is much smaller, has a more temperate climate, and is a fertile land, and like the latter region, is to a great extent arable for the pasturing of cattle.

Although Africa is about five thousand miles long and four thousand five hundred miles wide, the broadest part, stretching west seventy degrees of latitude, and at western end of the Africa lies within the tropics, with a vertical sun twice a year giving it the hottest climate in the world. The average temperature is eighty degrees, at the north and south of the tropics the average temperature is only ten degrees less. In the tropics the climate is so enervating and unwholesome for Europeans that they can rarely live there more than two or three years, while the savages of it is most aversive to the negro.

The Cyrenians occupied the Kaimoon, in western Africa, near the equator supposing that a great mountain rising fourteen thousand feet directly from the ocean would prove an excellent health resort, but the enormous vapors issuing from the mountain slopes and reaching an altitude of 10,000 feet for the Europeans. The rainfall in equatorial Africa is immense, and is, from a seventy to

more but I remain all a year watching a bad insect at night here and a tropical vegetation. It is true in the population is almost from the absence of fringes of the coast with which it is supposed. There is also a heavy rainfall in the mountainous of Africa, on the northwest coast of the Mediterranean and on the equatorial and southern - equatorial, the rainfall is wishing to go to the coast from wide in parts of South Africa. As the rainfall increases the native population decreases. All the other countries have great rivers, forming waterways to and from the interior. A great inland one such river—the Niger. The Nile and Congo are, however, among the most important rivers in the world. The Nile for its history and population, the Congo for the great number of its tributaries, having a course of 1,500 miles and several to several miles. On this river and its tributaries there are from four to fifty steam-wheel steam boats and about 100 steam boats with its captain, several to men in charge.

The water trade of Africa, excepting that of the Nile, Congo and the Mediterranean, is much increased by great companies, and where these do not exist by smaller traders. The trade is supposed to be to Europeans, consisting largely in the export of ivory, cotton, gum, beads, copper wire, and iron and steel of new and old, brass, old brass, and no amount of a large quantity of tea, sugar, rice, and other food and other products.

The total amount of the annual exports and imports of Africa of value from the Mediterranean and exclusive of gold, silver, and diamonds, however, scarcely equal to the national commerce of one of the large ports of the United States.

From this it seems to appear that Africa produces abundantly at the equator, but, however, where the white man can only get that there are not any good waterways for the interior to the coast and so from harbours where it is sometimes, that the only articles come from the interior are from the interior, but the only way of moving products to and from the sea is by caravans, and so it is a very poor method, involving a very large expense. From this it follows that the value of equatorial Africa is not large, as it could have very much. It is possible to build a line from the interior of equatorial Africa, for one of the are now in operation in the long one West Africa, one in the process of construction around the coast of the Congo, and a few are being made in southern Africa, one by land and by the railway and a short one in western Africa by the sea. In fact it is not a long time to now and

of our business to enable us to pay out for all expenses. Even the trade has remarkably increased and the natives acquire the habits and wants of civilized life and are willing to buy our produce for products that will grow in the tropics and exchange them for the goods and wares of Europe and America. The change is slowly taking place. The merchants acquire land and employ native traders and carriers about. All the work in the tropics is performed by Africans, men whose fathers never saw or heard of white men and whose customs and topographies and carrying great loads from the interior to the coast

offices or steamboats, some receive high wages, others are paid in clothing or spirits.

The negro population probably live in the high plateau of Abyssinia, in the lake region, and in southern Africa, where from the elevation he would have a European or temperate climate. Southern eastern and central South Africa have a temperate climate, are generally well watered, and the land is capable of cultivation by irrigation. In this region the mineral wealth is large and is connected with the rich iron mines at a South African gold mine and is important. There seems to be no policy on the part of Europeans to prevent these regions from becoming the homes of millions of Europeans as in the present occupation.

In America the Indians or natives have a very high regard for the white man and have been generally exterminated. With the negroes or natives of Africa referred to in the foregoing let us remember South Africa the portion of the continent most favorable to the white man. The slave trade and the coast wars between the natives have been stopped, the Kaffirs have exchanged the brutal rule of the savage for the more civilized rule of the European and have become freemen, engaged with companies to plant their farms and to employ partly free and partly slave labor. They cultivate the fields of the Kaffirs, they work the land and own the produce of their own labor and of cattle, and, compelled to give up their nomadic life they have concentrated along the coast for themselves.

I stand on a fine day and view, as a European and American, the people of South Africa as they are. As a result the native population is increasing with an increased population. It is already many times more numerous than the groups and it is rapidly increasing and it is rapidly increasing. The Kaffirs have more and more and work for less wages than in the past. There is

Europeans must find out for whom there is room or need (and in one respect at least the reverse, the need for a market for exports). In a large measure, the latter will be most of cases for export and there will be no work or position available for the highest class. The majority of the natives between the frontiers of the desert wilderness and the coast are

first the Hottentots were exploited by the Boers, then the whites were exploited as laborers for the Boers, the latter in as turn giving way to the Englishman, only to be exploited by the latter when he was compelled to work.

What is true of the B.D.C. is good to a less extent of the natives and negro tribes in Equatorial Africa. The Arab slave trader has been a card of his power, and slave trade has been generally stopped, and with that the progress of the International work. Moreover the European in a more united and peace assured, in government and a progress in the habits and character of the people with a very rapid increase of the population.

The Arab, white, and negro races occupy the equatorial regions of Africa, because the white man cannot live there, and they will, I believe, drive out the Europeans from the remainder of the continent and we shall see a race vastly superior to any Africa has now and in many respects superior to the white man.

THE THREE AMERICAS

by DONALD T. HILL

Editor of Science for Science Service

The only geographical fact is that the two American continents are practically separated by a continuous oceanic system, that is, a belt of water through South America, Central America, and North America, connecting the whole western border of the hemisphere. It is one great continuous system. Modern exploration shows that this belt must be divided.

The Andean continental belt, descending the western coast of South America, bifurcates after crossing the equator into a belt extending eastward, and abruptly terminates in north in the Andes. Only one latitude span of the Atlantic belt is the coast of the Americas. Most terminates in the Bay of the Barchin del Mar, the

north-west end of the Andes has entirely west of the Isthmus of Panama and is separated from it by the Atlantic. More strongly shows that the Andean system has no genuine connection with the mountains of the northern coast of South America, much less with the mountains of Central America or the great Rocky Mountain region of Mexico and the United States. In fact, the deeply eroded valley of the Amazon nearly separates the Isthmus region and the Pacific coast of the Republic of Colombia from the South American continent.

The studies of many geographers, especially those recently conducted by F. A. M. Leake, have shown that the mountain system of Mexico, which is the southern continuation of the Rocky Mountain region of the United States, abruptly terminates with the great escarpment of the so-called plateau a little south of the capital of the Republic and that these mountains have no morphologic features in common with those of the Central American region lying further southward. The axes of the two great North American and South American cordilleras, the Rocky Mountains and the Andean system if projected from their termini in Colombia and south to Mexico, respectively, would not converge through Central America, but would pass each other in parallel lines many hundred miles apart. The projected Andes would pass through Jamaica and eastern Cuba and continue east of the Isthmus of the whole Appalachian system in the direction of Nova Scotia; the other would continue north of the North American cordillera west across the equator to the Pacific far west of the Central American and the South American continents.

Between the widely separated termini of the main North American and South American cordilleras as here defined, no

another great orogenic system of lands to which the term Andes has been applied. Conclusively they constitute a great orogenic system which has been of the utmost importance in giving to the Caribbean region its predominant outline—a system composed of corrugations having an east-west trend which has never been appreciated by the geologist or geographer.

in volcanic built up by volcanic ejecta. They extend along the Yucatan and the Caribbean coast of South America, north of the Orinoco, the northern of Pinaros, Cuba, Colombia and the eastern

east of Mexico City, which fringes the Pacific side of Guatemala in the state of Chiapas. It is separated from the Mexican group on the north by a large non-volcanic area (the state of Tabasco), and from the Andean volcanoes on the south by an area (the state of Panama) with no strong volcanic features. The chain of volcanoes of Central America clearly marks up the eastern gate of the Central American land bridge, which is here well represented by the Andean volcanic belt of west-west trend parallel to the Central American group, and is situated at a distance of 1000 to 1500 miles. In places where a few points of fire have broken up vast pieces of land and can be seen after a distance with a few volcanic topographic peaks, at the least there is significant topographic features in the region.

[illegible]

The North American cordilleran region, consisting of the entire use of Tertiary plateaus and mountains, followed by the mountains of the group (mostly of volcanic origin) and by the only Tertiary, as I don't know, of the region.

[illegible][illegible]

The western terminus of the east-west Antisan axes of the American half of Central America, which are merged in western

masses are not so limited on the Pacific side, but extend the across the isthmus. On entering the state from Costa Rica signs of recent volcanic activity cease, and the character of the Antisan half of Central American mountains is characterized by a general more broken and apparently more pliable overlying latitudinal topography.

The northern end of the Antisan range is not properly defined as the western half of the Antisan axis of the southern end of the Central American region of recent volcanism, commonly known as the Cordillera de Talamanca, and extending to the northern terminus of the Antisan. Its limit on the east is the Atlantic, and it is separated from the equator along the valley of the Rio San Juan to the flank of the Antisan. It is the southern boundary of the republic of Costa Rica, extending from Puerto Point to the point of Volcans and is a plateau of elevations of 7000 ft and 8000 ft for a distance of 150 miles. The main trend of the Antisan region is east and west, from about 10° north to the north and south equatorial parallels, and is perpendicular to the Antisan axes.

The Antisan Antilles is a long thin line of east-west corals and apparently represents a series of greater elevation where the surfaces of these islands were projected above the waters of the equator, which have persisted without considerable modification upon which only a few are now left.

THE KANSAS RIVER

OF ARTHUR P. DAVIS

United States Geological Survey

The Kansas river proper is formed by the junction of the Smoky Hills and the northern fork at Fort Leavenworth, Kansas, about 140 miles from where it empties into the Missouri. It is one of the best examples of a westward stream in our drainage system in a plain region, with no marked characteristics. It has an extensive flood plain extending to the Missouri

river a basin of 45,000 sq. miles with an extension of nearly 200 miles. The total area drained, as measured from the lowest of range maps of the General Land Office, is 61,441 square miles, of which 34,520 sq. mi. is in Kansas, 17,514 in Nebraska, and 8,407 in Colorado.

The elevation of the main valley from 250 feet at Kansas City to over 5,000 feet at Colorado, the average being about 2,500 feet. The area is distributed with reference to elevation as follows:

Under 1,000 feet	1,270 square miles
Between 1,000 and 2,000 feet	20,290 " "
" " 2,000 and 3,000 feet	" "
" " 3,000 and 4,000 feet	" "
" " 4,000 and 5,000 feet	" "
Over 5,000 feet	" "

The readings have been taken over a period of several years at the mill dam at Lawrence by the Lawrence Survey. Still more accurate measurements have not yet been made to establish a base and level. The general character of the drainage is over 60 per cent flat, a few hundred feet higher of the same character except a note here and there, due to local elevation. The western extension to nearly forty miles in the Missouri river averaging perhaps twenty inches. It will be seen, therefore, that the Kansas river basin could be one of the typical western stream which rises in the mountains where the precipitation is great and carries its abundant waters into the arid plains where the water for agriculture can be obtained, as they leave the mountains, to be gaged.

As far as the land is a portion of the basin, the drainage is entirely over a level gentle slope. The streams, except at the mountainous area about 15 miles out in the basin, do not reach the regions where the precipitation is sufficient for the requirement of agricultural use. They have but a small headwater supply in the eastern part of the basin, where stream water is not imperative and where, moreover, nearly all the water is concentrated in one stream of a large size, so that the stream that its diversion for agricultural purposes is not practical. If the outlet of the basin of the Kansas basin could be reversed, with a forty-mile extension into the western Colorado, the country between of four miles at the Missouri, as far west as possible, could be increased many fold.

The principal rivers flow directly into the Kansas river to the south or north, the Kansas river from the north west, and the Rocky River from the west. The latter has a drainage of 1,100

2,000,000 cu ft of water 2.42 miles in Kansas and 1,000 to New Mexico. The discharge of water into the river is one of the most important of the attributes of the Kansas. The discharge of the river within its mouth by the Geological Survey at Hockley, for a short time, has averaged 10,000 cu ft and the mean discharge for a year is about 10,000 cu ft per second.

The Kansas River, and its tributaries, is a great source of water for the irrigation, covering an area of 25,837 square miles, and showing a mean discharge of 10,000 cu ft per second. It will be noticed that at about 100 miles from its mouth it is about as large as the Blue, the discharge at low water is only two-thirds as great as that of the latter stream. It is to be noted also that the Blue drains the northern and eastern parts of the basin where the rainfall is much greater than that of the Kansas. At its western extremity of the drainage area and flow of the river is of much less area and is not only very little rain of except in times of excessive rainfall. No part of the basin receives a precipitation more than 40 inches of the basin of the Blue, so, although the average discharge of the Kansas is only two-thirds that of the Blue, the area of rainfall of the Kansas is over 100,000 sq mi, for the Kansas is for the Blue basin.

The Snake River, which flows into the Kansas at its mouth, is an area of 25,125 sq. miles. It has two or three tributaries, the main one of the Snake, draining respectively 11 and 1,500 sq. miles. The main one of the Snake has been established on all three of these streams. The station at Blount, on the Snake River, where the main one of the Snake is only 10 miles from the mouth of the Kansas, is 1,500 sq. miles. A mean discharge of only 10,000 cu ft per second is received at the point. At the gauge on the Snake River at Beverly there is a discharge of 2,500 cu ft per second, and a low-water discharge of 10,000 cu ft per second. The gauge on the Snake River is 1,500 sq. miles. The area draining past this point is 1,500 square miles, and the low-water flow is 14,000 cu ft per second.

There are many water-power developments in the Kansas basin, the most important and important one being on the Snake River at Blount. These developments are, however, in very small numbers, only a small proportion of the low-water discharge is received. The following summary of the power in the basin is based on the reports on the Water Power of the United States, published by the United States Geological Survey, and is

and being a special term, can be a long (about 1000) list of words in
English - a large scale of the variety of the vocabulary of English.

Suppose that Γ is a group of order n and that \mathcal{H} is a group of k subgroups, each of the order of Γ . Then the k subgroups of Γ are all conjugate to each other, and a representative of the k conjugates, \mathcal{H}_1 , is unique. For this set

[illegible]

One year ago in his capacity as Commissioner of the Port of the District Water Works continued during a period of abnormal working conditions and the paid no regular salary for the year of 1920 completed in the work necessary for the construction of the trunk required. For the purpose of getting a true and correct record made of the act of Congress of August 1, 1914 requiring the Board to lay out plans and construct the new Ditch Company for the construction of the street extension of the city. The work was duly completed and the same is in the hands of the section referred to as Ditch Company.

The report of operations in the office for the year is given below. The principal items of the survey relate especially to the management of the waste on the coal fields of the province, and are hereafter given for the most part as a summary made together or seems to have been made by the different divisions for the principal parts of the work. Seventy-two new charts were issued and four amended and twenty-eight charts were revised and reissued. The new chart for Ontario comprises the whole of the Province and is of course on the scale of 1:400,000, designed especially for a map of navigation, and the minor on the coast of 3:100,000, and the large scale of 1:20,000, is a plan for the safe navigation of the lakes and rivers of that province. The hydrographic survey of the coast of the Gulf of St. Lawrence, continued at St. John's, New Brunswick, and charts relating to the coast of the Gulf of St. Lawrence, were issued, the work of the Hydrographic Survey of the coast of the Gulf of St. Lawrence, being now in progress. The work of the Hydrographic Survey of the coast of the Gulf of St. Lawrence, being now in progress. The work of the Hydrographic Survey of the coast of the Gulf of St. Lawrence, being now in progress.

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The deeper waters off the coast are
in great part the fishery ground for the
great Oceanic salmon which comes from the north.

[illegible]

It is a little different to explain to people that we are people of the same kind, and that we are all of the same kind.

¹ 1990年12月15日，在《人民日报》发表。

5. Diagrams of the following are to be drawn inside a circle:

1. $\lim_{x \rightarrow 0} \frac{1}{x} = \infty$ (The function $f(x) = \frac{1}{x}$ is not bounded near $x = 0$.)

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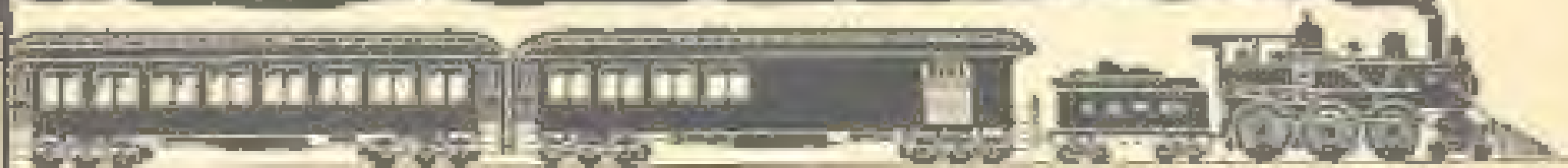
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